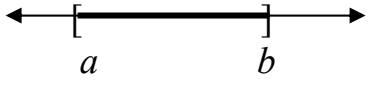
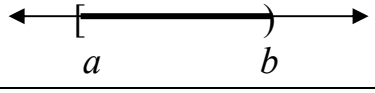
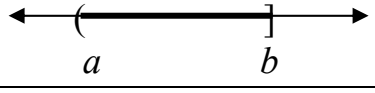
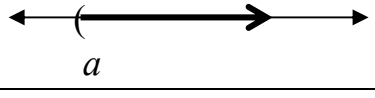
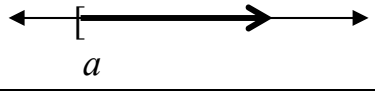
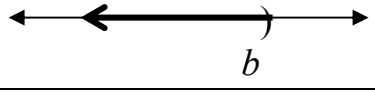
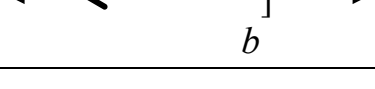
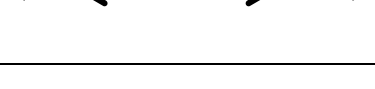
Interval Notation

Inequality	Interval Notation	Set-Builder Notation	Graph
$a < x < b$	(a, b)	$\{ x \mid a < x < b \}$	
$a \le x \le b$	$[a, b]$	$\{ x \mid a \le x \le b \}$	
$a \le x < b$	$[a, b)$	$\{ x \mid a \le x < b \}$	
$a < x \le b$	$(a, b]$	$\{ x \mid a < x \le b \}$	
$a < x$	(a, ∞)	$\{ x \mid a < x \}$	
$a \le x$	$[a, \infty)$	$\{ x \mid a \le x \}$	
$x < b$	$(-\infty, b)$	$\{ x \mid x < b \}$	
$x \le b$	$(-\infty, b]$	$\{ x \mid x \le b \}$	
All Real Numbers	$(-\infty, \infty)$		

Note that on the graph [and] are the same as • and (and) are the same as ○.

The **symbol** ∪ represents the union of two or more sets. It is used to combine two (or more) intervals together to make a single set. Example: $(-9, -3) \cup [2, 5)$ This means that you have the interval $(-9, -3)$ **and** the interval $[2, 5)$.